

In the Claims:

Please enter the following amended claims 1, 4, and 26:

Clean version of amended claims:

Sub D17
C1
1. (Once Amended) A method of forming a varactor device on a semiconductor substrate, comprising the steps of:

providing a semiconductor substrate having a first conductivity type;

providing an isolation structure on said semiconductor substrate, said isolation structure defining an implant region;

selecting a first peak dopant concentration and a first implant energy such that at least one of capacitance, leakage current, and tuning range of the varactor device is optimized;

forming a first implant in said implant region of said isolation structure using said first implant energy, said first implant having said first peak dopant concentration and a second conductivity type, wherein said first implant extends into the implant region a first distance;

forming a second implant in said implant region of said isolation structure using a second implant energy, said second implant having a second peak dopant concentration and said second conductivity type, wherein said second implant extends into the implant region a second distance, wherein said second distance is greater than said first distance.

4. (Once Amended) A method in accordance with claim 1, wherein said selecting step comprises determining an as-implanted dopant concentration profile for said first implant.

Sub D37
26. (Once Amended) A method of forming a varactor device on a semiconductor substrate, comprising steps of:

providing a semiconductor substrate having a first conductivity type;

selecting a first peak dopant concentration and first implant energy such that at least one of capacitance, leakage current, and tuning range of the varactor device is optimized;

forming a first implant in at least a portion of said semiconductor substrate using said first implant energy, said first implant having said first peak dopant concentration and a second conductivity type, wherein said first implant extends into said semiconductor substrate a first distance;

forming a second implant in at least a portion of said semiconductor substrate using a second implant energy, said second implant having a second peak dopant concentration and said second conductivity type, wherein said second implant extends into said semiconductor substrate a second distance, wherein said second distance is greater than said first distance.

Marked up version of amended claims:

1. (Once Amended) A method of forming a varactor device on a semiconductor substrate, comprising the steps of:

providing a semiconductor substrate having a first conductivity type;

providing an isolation structure on said semiconductor substrate, said isolation structure defining an implant region;

selecting a first peak dopant concentration and a first implant energy such that at least one of capacitance, leakage current, and tuning range of the varactor device is optimized;

forming a first implant in said implant region of said isolation structure using [a] said first implant energy, said first implant having [a] said first peak dopant concentration and a second conductivity type, wherein said first implant extends into the implant region a first distance;

forming a second implant in said implant region of said isolation structure using a second implant energy, said second implant having a second peak dopant concentration and said second conductivity type, wherein said second implant extends into the implant region a second distance, wherein said second distance is greater than said first distance.

4. (Once Amended) A method in accordance with claim [3] 1, wherein said selecting step comprises determining an as-implanted dopant concentration profile for said first implant.

26. (Once Amended) A method of forming a varactor device on a semiconductor substrate, comprising steps of:

providing a semiconductor substrate having a first conductivity type;

selecting a first peak dopant concentration and first implant energy such that at least one of capacitance, leakage current, and tuning range of the varactor device is optimized;

forming a first implant in at least a portion of said semiconductor substrate using [a] said first implant energy, said first implant having [a] said first peak dopant concentration and a second conductivity type, wherein said first implant extends into said semiconductor substrate a first distance;

forming a second implant in at least a portion of said semiconductor substrate using a second implant energy, said second implant having a second peak dopant concentration and said second conductivity type, wherein said second implant extends into said semiconductor substrate a second distance, wherein said second distance is greater than said first distance.

✓ Please cancel claims 3, 10, 11, 30, 38, and 39.